



PORTLAND  
CEMENT  
ASSOCIATION

Dedicated to Progress . . .

191.5-

*Excerpts from "The Mission of the Portland Cement Association," an address by President Frank T. Sheets at the Dedication of the Association's new Research and Development Laboratories pictured on front cover—*

**“WE ARE HERE** to dedicate our dreams of a few short years ago, now realized in these fine modern research and development laboratories; but we are dedicating more than buildings and more than testing equipment; we are also dedicating the spirit, the integrity, the intelligence and the productive powers of the men and women who will work here—all for the expansion of knowledge, for the improvement of product, for the extension of use—in the public interest and to build a greater America.

“The Portland Cement Association is a national, non-profit, unincorporated organization to improve and extend the uses of portland cement and concrete. Established with its main offices in Chicago since 1916, the Association is voluntarily supported by its member companies which make financial contributions on the basis of their cement shipments. We have 67 member companies, widely spread geographically and operating 141 separate plants, which produce about nine-tenths of the portland cement used in the United States and Canada.

“The Association's work consists of four principal parts:

scientific research in the field of portland cement and concrete;

development of new and improved cement-using products and methods;

promotion, educational work and technical service to extend the uses of portland cement and to improve concrete quality; and

accident prevention work to encourage safety in the plants of its member companies.

“To carry out this program, the Association maintains a general headquarters staff of more than 180 scientists, engineers, architects and writers, and a field organization of more than 300 engineers, architects and farm specialists working out of 26 district offices to serve cement users.

“General headquarters coordinates and gives direction to the program and develops the required scientific and technical information. The field organization uses this material in direct contacts with the public.

“The Association has nothing whatever to do with the manufacture, distribution, pricing or selling of portland cement. It does not collect, distribute or publish statistics on productive capacity, production, costs or prices for portland cement. It does not speak for the cement industry on commercial matters, and it has nothing to do with trade practices.

“Through its Accident Prevention Bureau, the Association gives leadership to the safety program of its member companies. In the last quarter century this safety work has been instrumental in reducing the number of accidents in member company plants by approximately 83 per cent, until today the cement industry is one of the safest of all heavy industries. The Portland Cement Association safety trophy, awarded annually since 1924 to cement mills operating without lost-time accidents, has been proudly won by 149 plants operating a total of 790 accident-free years.”



A black and white photograph showing a large crowd of people, mostly men in suits and hats, gathered in front of a large, modern building. The building has a sign that reads "PORTLAND CEMENT ASSOCIATION". An American flag is visible on the left side of the building. The crowd is dense, filling the foreground and middle ground, facing towards the building.

the Portland Cement Association has carried on an intensive program of research and development on an ever-expanding basis since it established its first research laboratories in 1916. And to shorten the lag between the research laboratory findings and the actual field application of improved techniques in the uses of cement and concrete, it has broadened its technical service, educational activities and engineering field work to benefit all cement users.



Thirty specialized laboratories for research and development in portland cement and concrete are housed in the Association's new laboratory buildings which contain a total of 98,000 sq.ft. (more than two acres) of floor space.

The Association's new \$3,000,000 laboratories near Chicago provide enlarged facilities for the research and development phases of its manifold program. This work has contributed much to cement and concrete technology and to progress in the construction field. The laboratories are the largest and most completely equipped in the world devoted exclusively to research on cement and concrete. The highly trained engineers, chemists

and research specialists who staff them are carefully selected from all over the country for their technical competence and engineering skills.

These laboratories exemplify the sincere desire of the 67 member companies of the Association (listed on page 22) to make possible the best and most economical use of portland cement and concrete, and to be of increasing public service.



# Research and Development

Chemically, portland cement is a combination of lime, silica, alumina, iron oxide and small amounts of other ingredients, including gypsum added in the final grinding process to regulate the setting time of the cement.

Physically, it is the result of processing literally mountains of limestone, clay, marl, sand, iron ore, cement rock, slag and other raw materials into a clinker, formed in huge cylindrical steel rotary kilns where a chemical reaction between the raw materials takes place at a heat of approximately 2700 deg. F. To produce finished portland cement, this clinker is then ground into a powder so fine it will pass through a sieve capable of holding water.

Both chemically and physically, portland cement is one of the most complex . . . as well as the most widely used . . . of all modern engineering materials. For these reasons, Association studies in both laboratory and field require the most refined and advanced procedures of modern science.

Concrete is a mixture of sand and gravel or other inert materials bound together by a hardened paste made of portland cement and water. The durability and strength of the concrete depend largely on the quality of the portland cement-water paste. If the paste is diluted with too much water, the concrete will lack durability and will not be strong. Because the cement-water paste is so vitally important to the quality of concrete, scientists are constantly studying the complex internal, chemical and physical properties of the paste.

The sieve this young lady holds in her right hand has 40,000 openings to the square inch, yet portland cement is so carefully made and finely ground that more than 90 per cent of it will pass through. An identical sieve in her left hand is holding water.



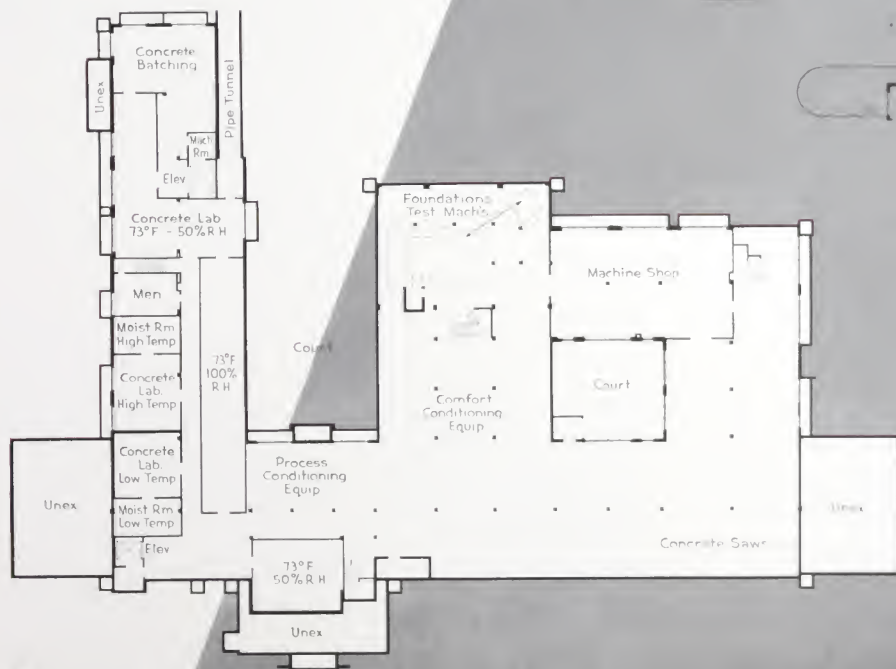


The variety of work in the laboratories is as diverse as are the uses of portland cement and concrete. The nature of the work in the laboratories is as complex as portland cement itself. Apparatus delicate enough to weigh or measure dust from a butterfly's wings and huge ma-



chines powerful enough to crush a paving slab or twist a girder are required.

A better conception of the many laboratory facilities needed for cement and concrete research can be gained by inspection of the floor plans reproduced here.



FLOOR PLAN  
AUXILIARY BUILDING

BASEMENT FLOOR PLAN  
MAIN BUILDING





A 2-ft. high concrete specimen—12 in. in diameter—was photographed at the split second of its "explosion" after withstanding a compressive force of 873,000 lb., a load equivalent to the weight of several large railway locomotives. Tests like this provide information which helps engineers design safe, economical concrete structural members to carry enormous loads.

Because concrete structures must serve under widely differing conditions of climate and use, the Association staff is constantly carrying on observation of concrete in the field under severe conditions of weather and wear.

To supplement, interpret and expand actual field observation studies, these same conditions are simulated in the Association's new laboratories by means of controlled temperature and humidity rooms and testing machines of various types.

For example, in durability tests, specimens are subjected to moist heat, dry heat and severe cold; to alternate cycles of freezing and thawing, such as occur in areas where arctic temperatures are encountered; and cycles of heating and drying, cooling and soaking, such as occur when rain falls on pavements or other structures that have been exposed to a broiling summer sun. In strength tests, machines rapidly determine the ability of the specimens to withstand the racking, bending, pulling and crushing forces to which concrete is often subjected.

Continuing studies relating to proportioning of materials, placing and curing of concrete, along with durability and strength tests are of vital importance in determining the performance of concrete under different condi-

In specially constructed rooms in the laboratories, concrete specimens in a few short weeks are subjected to a punishing yearly weather cycle of freezing and thawing and wetting and drying.

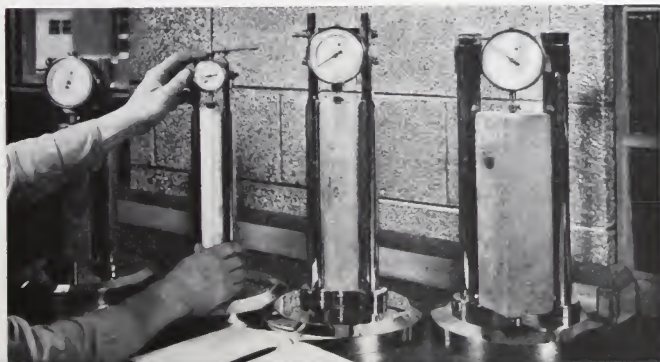




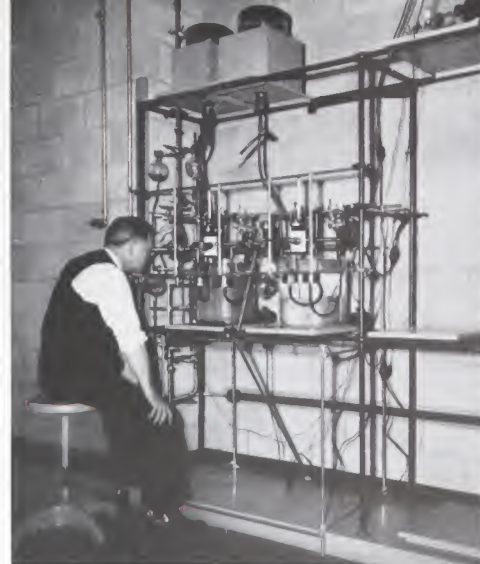
tions of exposure and loading; but of equal importance are the highly scientific investigations into the complex chemical and physical structure of cement paste and hardened concrete—investigations which are essential in expanding even further the many uses of portland cement and concrete.

These studies are precise and continuous, and are carried out in chemistry and physics laboratories especially equipped for such work. Chemical analyses are made not only of the portland cements used in making concrete test specimens, but of the raw materials used in the production of the cements, and the aggregates and other materials used with them to make concrete. Meticulous tests, measurements and studies are also made of cement paste . . . the mixture of portland cement and water which, as it hardens, binds together sand and gravel, crushed stone or other materials, into concrete. These studies are vital, for the quality, performance, and most of the characteristics of concrete are directly dependent upon the materials which enter into its making and upon the characteristics and performance of the cement-water paste.

Thousands of microscopic measurements—as small as a ten-thousandth of an inch—are made at Association laboratories to determine the physical properties of concrete specimens subjected to severe weather tests.



This PCA scientist is studying factors which influence the watertightness of concrete which is vital in water and sewerage pipe lines, reservoirs, swimming pools, foundations, basements, and scores of other similar uses.



Almost every climate in the world can be duplicated in the laboratories' controlled temperature and humidity rooms, and concrete test specimens are subjected to every conceivable type of punishment from exposure. Information gained from these tests is quickly made public so that users everywhere can enjoy maximum service from concrete.



By listening to concrete specimens "sing" on this high frequency sonic testing machine, laboratory scientists gain important information on the design of concrete to give maximum service for highways and countless other structures.





This heavy-duty laboratory saw is cutting specimens from a section of concrete pavement which has been in use for years. These specimens will be subjected to microscopic and other scientific studies as part of a comprehensive analysis of the internal structure of concrete in service.



A prestressed concrete beam undergoes test in the million-pound compression testing machine. Prestressing, a method of making concrete even stronger by placing high tension or "pull" on the steel reinforcement embedded in the concrete, is a major PCA development project.

Association work in laboratory and field has resulted in substantial savings through greater durability and longer service life for concrete structures.

The overall result of this work has been to improve the firesafety, health and sanitation of communities in the United States and Canada, and to create even better, safer and more economical facilities for highway, rail, water and air transportation.

A few of the principal development projects of the Association have included: sound engineering design for concrete pavements, which has helped in the development



Soil-cement pavement has lifted many a farmer out of the mud by making possible low-cost, light-traffic roads utilizing road-site soil. Here technicians study cores cut from soil-cement pavements.



A freshly molded concrete block is placed in a steam chamber to be cured under controlled conditions. Results of this and similar investigations are made available to the more than 5,000 concrete masonry manufacturers in the United States and Canada.

This expressway was built with air-entrained concrete, developed through research to produce pavements highly resistant to severe frost action and surface scaling caused by chemicals used to remove ice and snow.







PCA scientists and engineers working in the laboratory and the field have developed much of the technical data necessary for the construction of finer, longer-lasting concrete highways . . . airport pavements to carry today's tremendous plane loads . . . more beautiful and more economical concrete masonry homes, architectural concrete buildings and firesafe farm structures . . . bridges of great strength and beauty . . . soil-cement for low-cost, light traffic pavements and a variety of other uses . . . and huge dams for water supply, irrigation, and flood control.



of America's network of concrete highways; soil-cement for low-cost, light-traffic roads, streets and airports and for other uses; pressure grouting to stabilize railway and highway subgrades, fills and tunnels, and reduce track maintenance expense; new methods of concrete house building; new methods of making colored concrete, and special pre-cast concrete products.

The Association had an important part in the development of air-entrained concrete that is highly resistant to

severe frost action, and to scaling where salts are used for ice and snow removal from pavements. Laboratory studies and analyses of the indeterminate stresses developed in reinforced concrete structures, and of the acoustical properties and heat insulation values of concrete have helped architects and engineers to design and build more economically the soaring skyscrapers and bridges, modern factories and firesafe schools, hospitals, apartment buildings and homes that today we take for granted.

Concrete has long been recognized as a structural material, but in the last few years it has emerged as an important architectural material as well.

In the construction of its new laboratories it was only natural that the Association should practice what it has preached. The exterior walls of the two buildings are of architectural concrete, the frames and floors of reinforced concrete. The interior walls are of concrete masonry. Cast stone was used in portions of the lobby and rest rooms.

Since concrete is plastic when placed, it is possible to cast ornamentation of the same material as the structural portions of a building—and at the same time. Full advantage was taken of this important property of concrete in building the new laboratories, as seen by the pictures opposite.





Ornamental concrete panels are set into the underside of roof decks (right). Molds for casting these panels were reused many times to carry out a motif, making this repetition of detail in concrete speedy and inexpensive. The reeded piers (above) were made with the same concrete used for the board-grained textured walls. The difference in appearance was obtained by using different types of forms. Most of the interior walls are concrete masonry decorated with portland cement base paints. The open texture of the masonry is pleasing in appearance, as may be seen in the auditorium wall at left below, and is sound-absorbent, producing excellent acoustical properties. Highly polished cast stone was used to face the lower walls and stairs of the lobby (below right). The floors are terrazzo.





In one phase of the Association's "Long-Time Study", the effect of exposure on some 2,000 concrete slabs, posts and boxes is being observed at two test plots located in the widely varying climates of the Midwest and the South. Another project is the observation of concrete structural members driven into both sea water and fresh water in four widely separated locations having different exposure conditions.

The complete confidence of Association members in the future of portland cement and concrete is evidenced by their sponsorship of the "Long-Time Study of Cement Performance in Concrete", described on this page. The public benefits of this investigation will far outlive the men who conceived it. Samples of materials used in the "Long-Time Study" specimens are preserved in more than 24,000 hermetically sealed containers for study by scientists 25, 50 and 100 or more years from now.



The new laboratories are the "headquarters" for that phase of the Association's work dealing with research and development. But they by no means constitute the only facilities for such work.

In addition, the PCA maintains a staff of research scientists at the National Bureau of Standards in Washington, D. C., working under a cooperative fellowship set up to study basic problems relating to the constitution and properties of portland cement. The Association actively participates in several of the more than 265 different research projects involving cement and concrete being carried on by engineering colleges and private, federal and state agencies; and in numerous field exposure laboratories widely dispersed throughout the United States the Association carries on its Long-Time Study of Cement Performance in Concrete.

The Long-Time Study, started in 1940, is planned to continue indefinitely. While it is financed by the Association, the program

was developed by an advisory committee of twelve members. Eight of these were prominent research engineers and scientists associated with some of the largest technical and construction agencies in the United States and Canada, and four were research scientists of the Portland Cement Association.

The scope of this research is nationwide. It includes such contrasting locations as New England and Florida, the High Sierras of California and the hills of South Carolina.

Largest of the field research projects are three test highways totaling more than six miles of two-lane concrete pavement, located in widely varying climatic areas of the United States. Other long-time studies are being conducted on thousands of concrete structural members exposed to sea water and fresh water

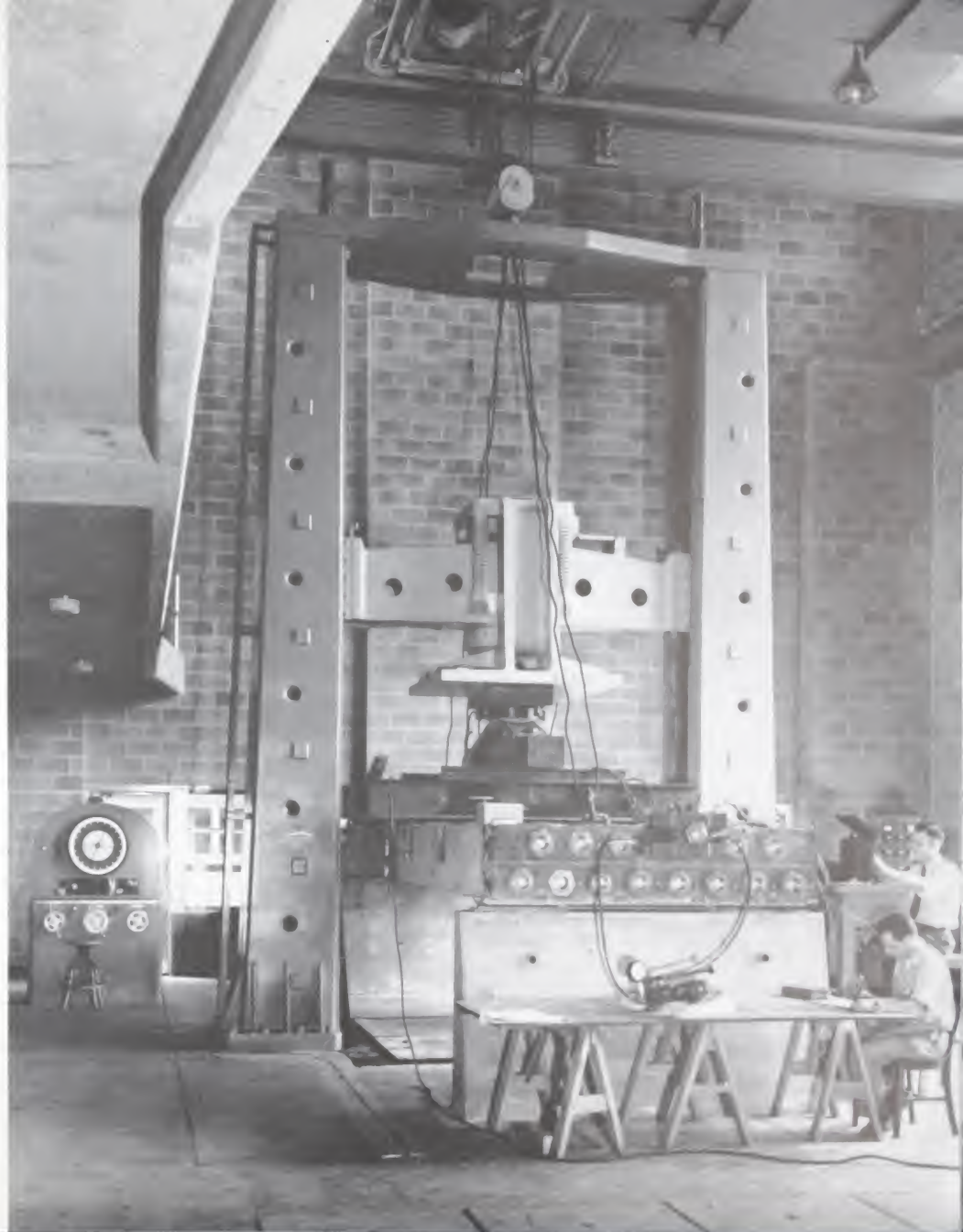


and to a variety of weather conditions. Still another phase of the long-time study is the observation of some 2000 concrete slabs, posts and boxes placed in test plots—one in Georgia and the other in Illinois.

Hermetically sealed samples of the portland cements and aggregates used in these investigations are stored at the Association's new laboratories, so that scientists 25, 50, 100 or more years from now will be able to examine the specific cement and aggregate used in specimens incorporated in this study.

Observation of the more than 10,000 test specimens originally included in the study has already provided much valuable information on the types of concrete mixtures best suited to the climates and conditions of service in which the specimens are located. Continuing observation is expected to provide information that will result in even higher quality, longer lasting, more economical portland cement concrete.

This huge million-pound compression testing machine can crush a pavement slab, yet is calibrated so delicately that it can measure the pressure needed to shatter a watch crystal. The machine is needed in studies of the strength of concrete columns, beams and slabs, and will accommodate specimens up to 30 ft. in length, 10 ft. in width and 15 ft. in height.





The Association's all-concrete headquarters building located at 33 W. Grand Avenue in Chicago is the nerve center of the organization's manifold activities, serving cement users in the United States and Canada for more than a third of a century.

## Education, Technical Service and Promotion Work

It is a policy of the Portland Cement Association to make all scientific discoveries and new developments, including patentable inventions, relating to cement and concrete uses, fully and freely available to the public in the shortest possible time.

To do this, the Association maintains at its general headquarters building in Chicago a staff of engineering specialists and writers who coordinate and translate into easily understandable form specialized and oftentimes highly technical

information. This information is then made available to cement users through the Association's field engineers, through short courses, demonstrations and lectures conducted by staff members, and through motion picture films, slides, advertising and a wide range of technical and non-technical literature.

Through this widespread educational program, the PCA has become generally recognized as headquarters for technical service in its field, and as a clearing house for reliable, up-to-the-minute information on portland cement, the making of concrete, design procedures and construction methods.



Two and one-half million pieces of literature are distributed by the Association in an average year. More than 400 different publications have been prepared to service the hundreds of thousands of requests for information which the Association receives annually from cement users in the United States and Canada.

Each year the general and district offices of the Portland Cement Association receive approximately 300,000 requests for information. These requests come from all over the United States and Canada, by personal calls, telephone, telegraph and mail. Each request is given prompt attention by a competent staff member . . . whether it be from an engineer, architect or contractor working on a metropolitan skyscraper, or a distant farmer who wants to build a concrete barn floor or feeding lot.

To service the great bulk of these requests quickly and adequately, the Association has prepared more than 400 different publications covering the various fields in which cement and concrete are used. The publications range from highly technical booklets on the design of reinforced concrete to simple, easily understood folders on how to build a concrete septic tank or make small improvements around the home. More than 2,500,000 pieces of literature are distributed by the Association in an average year.

To gather, appraise and put into usable form the vast amount of specialized information that is needed to answer requests, the Association maintains six separate technical and promotion bureaus. These bureaus include:

**HIGHWAYS AND MUNICIPAL:** The Association cooperates closely with engineers, contractors and public officials in



the planning, designing and building of concrete pavements for roads, streets, alleys, airports, parking facilities and other uses. Technical reports and manuals and the **CONCRETE HIGHWAYS AND PUBLIC IMPROVEMENTS** magazine help keep engineers and officials informed on the latest developments in the use of concrete pavement.

**STRUCTURAL AND RAILWAYS:** The design and construction of large reinforced concrete structures, and the many railroad uses of portland cement and concrete call for a great amount of technical data as well as engineering skill. The Association, through its educational work, its technical service, and three of its magazines—**R. C. (REINFORCED CONCRETE)**, **CONCRETE FOR RAILWAYS**, and **ARCHITECTURAL CONCRETE**—furnishes up-to-date information on progress in these fields.

**CONSERVATION:** Concrete is widely used in the construction of dams, reservoirs, levees, flood walls and spillways, for

irrigation and drainage canals, and for water supply, sanitation and sewage facilities. It plays an important role in the restoration, preservation and development of our soil and natural resources, and in the control and supply of water. Through its Conservation Bureau and its district offices, the Association provides technical service and information on the uses of portland cement and concrete in this broad field.

**HOUSING AND CEMENT PRODUCTS:** Concrete, in addition to being one of the principal wall materials used in the construction of houses, is used almost exclusively for basement walls, foundation walls and footings, and for a variety of other purposes in home building. In one recent year, for example, concrete was used in the construction of 123,700,000 sq.ft. of house floors alone. The Association furnishes information on the use of concrete in house and small building construction, and on the wide and growing range of concrete products.

**FARM:** The uses of concrete on the farm are almost as varied as the duties of the farmer himself. Only a partial listing would include its use in the construction of barns, milk houses, feed storage bins, feeding lots and barnyard pavements, silos, tractor and tool sheds, farrowing and poultry houses, water supply and fire-fighting facilities, sewage and sanitation works, soil erosion control, and a multitude of home improvements.

**SOIL-CEMENT:** The Portland Cement Association won the American Trade Association Executives Award for outstanding public service in developing soil-cement pavements. An educational program coupled with continuing research has expanded the uses of this relatively new construction material. It has resulted in the building of more than 72,000,000 sq. yd. of low-first-cost soil-cement paving in the continental United States for light traffic roads, streets and airports, and for ditch and canal linings, embankment slopes and similar projects.



Association publications range from simple non-technical folders on how to mix concrete by hand and make small improvements around the home, to highly technical design and construction booklets for use by engineers, architects and contractors.



Each year hundreds of thousands of people view Association educational motion pictures, film strips, slides and other visual aids prepared to help them gain increasing value from the use of portland cement and concrete.

Spearheading the Association's educational program is a field staff of more than 300 skilled engineers, architects and farm specialists, working out of general headquarters and 26 district offices to serve cement users in 45 states, the District of Columbia and British Columbia.

These men are backed by the Association's staff in Chicago which furnishes them with technical information, and keeps them abreast of current progress in all sections of the country. Thus the fieldmen are able to render expert technical service to engineers, contractors, architects, public officials and other users of cement, and to help them with their cement, concrete, design and construction problems.

At no time does the Association's staff furnish engineering or architectural plans, or in any way assume the functions of the engineer or architect.

As a part of its educational program, the Association staff gives hundreds of lectures and demonstrations for engineers, construction superintendents and workers, farmers and others to help them get maximum service from concrete. It also provides educational information for engineering and architectural colleges, vocational schools, farm organi-



In a recent year, more than 50,000 architects, engineers, construction superintendents, farmers, students and many others interested in getting maximum service from portland cement and concrete attended educational lectures and demonstrations conducted by Association staff members.





Association service to cement users is comprehensive. It reaches from the office of the architect and designer in a metropolitan center to the construction superintendent on the job—and to farm leaders sponsoring concrete construction demonstrations in far-distant rural communities.



By familiarizing designers, public officials and builders with the newest construction methods, Association staff members help them to effect economies and provide even better service to the public. However, the Association does not furnish engineering or architectural plans, because such plans require the services of local engineers and architects.

zations, technical groups and construction agencies, and assists with instruction on improved methods of concrete design and construction.

Another important phase of the educational program includes the Association's "short courses". In one year more than 50,000 engineers, architects, contractors, producers of ready-mixed concrete, concrete products manufacturers and others attended these courses to study how best to use portland cement, make quality concrete and soil-cement, and design and build concrete pavements and structures.

The Association makes wide use of visual aids in its educational program. It has a number of film strips and motion pictures, most of the latter in sound and color, to portray graphically the manufacture of portland cement, and its use in many fields. These films are in constant demand by engineering and technical organizations, and by industrial, agricultural, business, social and educational groups.

The PCA general headquarters staff (including the research and development division) and its widespread field organization work as a team to help users get ever greater and lower cost service from portland cement and concrete construction.



# Safety Work

In the last 25 years, member companies of the Association have reduced the frequency of accidents in their plants by approximately 83 per cent... one of the most remarkable and gratifying records ever established in any heavy industry.

This record is particularly significant because the manufacture of portland cement involves the hazardous operations of quarrying, mining and blasting, the use of high voltage electric current, intense heat and some of the world's largest moving machinery.

This enviable position is the result of carefully planned and executed safety programs in the plants of member companies of the Association. In these programs, work methods and equipment are periodically studied for hazards to health and safety, and corrective measures are instituted and mechanical safeguards provided where needed. Persistent programs of safety education are carried on.

The PCA, through its Accident Prevention Bureau, coordinates and gives leadership and educational assistance to these programs. It maintains an accident-reporting system, and prepares and distributes to member companies a variety of publications, posters, bulletins, letters, and other safety aids. It also holds a series of regional safety meetings for company and plant leaders in strategically located cities throughout the country. In these sessions, safety practices are examined,

The Portland Cement Association's Safety Trophy is awarded or reawarded annually to those member company cement mills operating a full calendar year without a lost-time accident. It has been won by 149 plants, operating a total of 790 accident-free years... a safety record believed to be unparalleled by any other industry.



safety organizations and programs are appraised, and safety leadership problems discussed.

To encourage these safety programs, the Association annually awards or reawards its safety trophy to mills in which workers operate the full calendar year without a lost-time accident. It also maintains a unique Thousand-Day Club composed of plants credited with more than 1,000 successive safe days of operation.

A portland cement mill, one of more than 150 such plants in the United States and Canada.



# Portland Cement Association MEMBER COMPANIES ...

AETNA PORTLAND CEMENT CO.  
P.O. Box 392, Bay City, Mich.

ALABAMA DIVISION, IDEAL CEMENT CO.  
256 N. Joachim, Mobile, Ala.

ALLENTOWN PORTLAND CEMENT CO.  
Fuller Bldg., Catasauqua, Pa.

ALPHA PORTLAND CEMENT CO.  
15 S. Third St., Easton, Pa.

ARIZONA PORTLAND CEMENT CO.  
Rillito, Ariz.

ARKANSAS DIVISION, IDEAL CEMENT CO.  
611 Wallace Bldg., Little Rock, Ark.

ASH GROVE LIME & PORTLAND CEMENT CO.  
101 W. 11th St., Kansas City 6, Mo.

BESSEMER Limestone & CEMENT CO.  
1100 Wick Bldg., Youngstown 3, Ohio

BRITISH COLUMBIA CEMENT CO., LTD.  
500 Fort St., Victoria, B.C., Canada

CALIFORNIA PORTLAND CEMENT CO.  
General Petroleum Bldg., Los Angeles 17, Calif.

CANADA CEMENT COMPANY, LTD.  
P.O. Box 290, Station B, Montreal, Que., Canada

COLORADO DIVISION, IDEAL CEMENT CO.  
Denver National Bldg., Denver 2, Colo.

CONSOLIDATED CEMENT CORP.  
111 W. Monroe St., Chicago 3, Ill.

KANSAS DIVISION  
618½ Madison St., Fredonia, Kan.

MICHIGAN DIVISION  
1003 National Bank Bldg., Jackson, Mich.

COPLAY CEMENT MANUFACTURING CO.  
Coplay, Pa.

CUMBERLAND PORTLAND CEMENT CO.  
Chattanooga Bank Bldg., Chattanooga 2, Tenn.

DEWEY PORTLAND CEMENT CO.  
424 Alameda Road, Kansas City 2, Mo.

DIAMOND PORTLAND CEMENT CO.  
Middle Branch, Ohio

FEDERAL PORTLAND CEMENT CO., INC.  
P.O. Box 115, Buffalo 5, N.Y.

GENERAL PORTLAND CEMENT CO.  
111 W. Monroe St., Chicago 3, Ill.

FLORIDA DIVISION  
305 Morgan St., Tampa 2, Fla.

SIGNAL MOUNTAIN DIVISION  
531 Volunteer Bldg., Chattanooga 2, Tenn.

TRINITY DIVISION  
1618 Republic Bank Bldg., Dallas 1, Texas

GLENS FALLS PORTLAND CEMENT CO.  
Glens Falls, N.Y.

GREEN BAG CEMENT DIVISION, PITTSBURGH COKE AND CHEMICAL CO.  
P.O. Box 1645, Pittsburgh 30, Pa.

GULF DIVISION, IDEAL CEMENT CO.  
P.O. Box 3046, Houston 1, Texas

HAWKEYE PORTLAND CEMENT CO.  
802 Hubbell Bldg., Des Moines 9, Iowa

HERCULES CEMENT CORP.  
1420 Walnut St., Philadelphia 2, Pa.

HERMITAGE PORTLAND CEMENT CO.  
American Trust Bldg., Nashville 3, Tenn.

HURON PORTLAND CEMENT CO.  
Ford Bldg., Detroit 26, Mich.

KEYSTONE PORTLAND CEMENT CO.  
1400 S. Penn Square, Philadelphia 2, Pa.

KOSMOS PORTLAND CEMENT CO.  
Stark Bldg., Louisville 2, Ky.

LAWRENCE PORTLAND CEMENT CO.  
150 Broadway, New York 7, N.Y.

LEHIGH PORTLAND CEMENT CO.  
Young Bldg., Allentown, Pa.

LONE STAR CEMENT CORP.  
100 Park Ave., New York 17, N.Y.

LONGHORN PORTLAND CEMENT CO.  
1200 Transit Tower, San Antonio 5, Texas

LOUISVILLE CEMENT CO.  
315 Guthrie St., Louisville 2, Ky.

MANITOWOC PORTLAND CEMENT CO.  
Manitowac, Wis.

MARQUETTE CEMENT MANUFACTURING CO.  
20 N. Wacker Drive, Chicago 6, Ill.

MEDUSA PORTLAND CEMENT CO.  
1000 Midland Bldg., Cleveland 15, Ohio

MISSOURI PORTLAND CEMENT CO.  
3615 Olive St., St. Louis 8, Mo.

MONARCH CEMENT CO.  
Humboldt, Kan.

MONOLITH PORTLAND CEMENT CO.  
215 W. Seventh St., Los Angeles 14, Calif.

MONOLITH PORTLAND MIDWEST CO.  
215 W. Seventh St., Los Angeles 14, Calif.

NATIONAL CEMENT CO.  
2308 Fourth Ave., N., Birmingham 3, Ala.

NATIONAL PORTLAND CEMENT CO.  
1434 Land Title Bldg., Philadelphia 10, Pa.

NAZARETH CEMENT CO.  
Nazareth, Pa.

NEBRASKA DIVISION, IDEAL CEMENT CO.  
680 Insurance Bldg., Omaha 2, Neb.

NORTH AMERICAN CEMENT CORP.  
41 E. 42nd St., New York 17, N.Y.

NORTHWESTERN PORTLAND CEMENT CO.  
Northern Life Tower, Seattle 1, Wash.

NORTHWESTERN STATES PORTLAND CEMENT CO.  
Mason City, Iowa

OKLAHOMA DIVISION, IDEAL CEMENT CO.  
1018 Perrine Bldg., Oklahoma City 2, Okla.

OLYMPIC PORTLAND CEMENT CO. LTD.  
1425 Dexter-Morton Bldg., Seattle 4, Wash.

PEERLESS CEMENT CORP.  
1144 Free Press Bldg., Detroit 26, Mich.

PENNSYLVANIA-DIXIE CEMENT CORP.  
60 E. 42nd St., New York 17, N.Y.

PETOSKEY PORTLAND CEMENT CO.  
Petoskey, Mich.

PITTSBURGH PLATE GLASS CO., COLUMBIA CEMENT DIVISION  
Zanesville, Ohio

RIVERSIDE CEMENT CO.  
621 S. Hope St., Los Angeles 14, Calif.

SAN ANTONIO PORTLAND CEMENT CO.  
P.O. Box 4158, Station A, San Antonio 7, Texas

ST. MARY'S CEMENT CO. LTD.  
357 Bay St., Toronto, Ont., Canada

SOUTHWESTERN PORTLAND CEMENT CO.  
1034 Wilshire Blvd., Los Angeles 14, Calif.

SPOKANE PORTLAND CEMENT CO.  
724 Old National Bank Bldg., Spokane 8, Wash.

STANDARD LIME & STONE CO.  
2000 First National Bank Bldg., Baltimore 3, Md.

STANDARD PORTLAND CEMENT DIVISION, DIAMOND ALKALI CO.  
810 Union Commerce Bldg., Cleveland 14, Ohio

SUPERIOR CEMENT DIVISION, NEW YORK COAL SALES CO.  
150 E. Broad St., Columbus 15, Ohio

SUPERIOR PORTLAND CEMENT, INC.  
1003 Seaboard Bldg., Seattle 1, Wash.

UNION PORTLAND DIVISION, IDEAL CEMENT CO.  
554 S. Third West, Salt Lake City, Utah

UNIVERSAL ATLAS CEMENT CO.  
135 East 42nd St., New York 17, N.Y.

VALLEY FORGE CEMENT CO.  
Fuller Bldg., Catasauqua, Pa.

VOLUNTEER PORTLAND CEMENT CO.  
P.O. Box 1190, Knoxville, Tenn.

WHITEHALL CEMENT MANUFACTURING CO.  
123 S. Broad St., Philadelphia 9, Pa.

# Portland Cement Association OFFICES ...

HEADQUARTERS ORGANIZATION: *General Office and Research Laboratories, 33 W. Grand Avenue, Chicago 10, Illinois*

## DISTRICT OFFICES

ATLANTA 3, GA. Hurt Bldg.	CHICAGO 10, ILL. 33 W. Grand Ave.	INDIANAPOLIS 4, IND. 611 Merchants Bank Bldg.	MEMPHIS 3, TENN. 916 Falls Bldg.	OKLAHOMA CITY 2, OKLA. 1308 First National Bldg.	SALT LAKE CITY 1, UTAH David Keith Bldg.	VANCOUVER, B.C., CANADA 318 Shelly Bldg.
AUSTIN 1, TEXAS 114 East 8th St.	COLUMBUS 15, OHIO 50 W. Broad St.	KANSAS CITY 6, MO. 1627 Dierks Bldg.	MILWAUKEE 2, WIS. 735 N. Water St.	OMAHA 2, NEB. 504 S. 18th St.	SEATTLE 1, WASH. 903 Seaboard Bldg.	WASHINGTON 4, D.C. 837 National Press Bldg.
BIRMINGHAM 3, ALA. 504 Warts Bldg.	DENVER 2, COLO. 521 Boston Bldg.	LANSING 8, MICH. Olds Tower Bldg.	MINNEAPOLIS 2, MINN. 920 Northwestern Bank Bldg.	PHILADELPHIA 2, PA. 1528 Walnut St.	SPOKANE 8, WASH. Old National Bank Bldg.	
BOSTON 16, MASS. 20 Providence St.	DES MOINES 9, IOWA 408 Hubbell Bldg.	LOS ANGELES 17, CALIF. 816 W. Fifth St.	NEW YORK 17, N.Y. 347 Madison Ave.	RICHMOND 19, VA. 1210 State Planters Bank Bldg.	ST. LOUIS 1, MO. 913 Syndicate Trust Bldg.	



# LOCATION of Member Company Mills and PCA Offices ...



## *In Recognition . . .*

Through the years the Portland Cement Association has been privileged to cooperate with many engineering colleges, technical and scientific organizations and public and private agencies which have contributed much to the technology of portland cement and concrete.

To these engineers, architects, educators, contractors, government design and construction agencies, inventors, home builders, farmers, transportation agencies, public health services and many others, the Association expresses its sincere appreciation and warm thanks for the fine work they have done—and for the opportunity of cooperating with them in the building of a better America.